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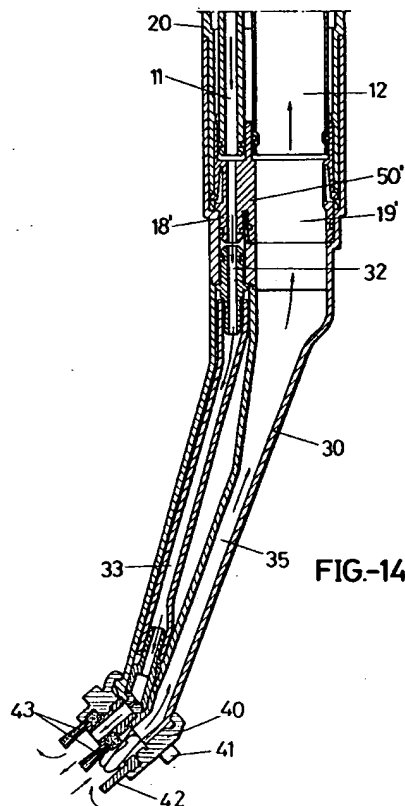
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**E-28036 Madrid (ES)**(54) **Coupling for steam cleaning machines.**

(57) A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines (1), consisting of adapting a male connector (3), fitted with an electric connection, an intake connection, and a steam connection, to a support on a cleaning machine, said male connector having unions for connecting the intake (12), steam outlet (11) and cables, and it is fastened to a flexible pipe (13) and fitted with an anchoring claw or emerging stub, the opposite end of the flexible tube being connected to a handle (14) provided with push-buttons (15-16) for starting the cleaning machine. Said handle incorporates extensions shaped as stiff plastic material pipes at an end of which an accessory parts is incorporated for steam outlet and intake, and it is fitted with two nozzles on which rubber strips (42) and brush lines (43) are placed, a channeling (33) for passing an intake flow, and a second channeling (35) for passing said steam flow outside being maintained every moment inside all the accessories united each other.

**FIG-14****EP 0 670 140 A1**

## BACKGROUND OF THE INVENTION

The present specification refers to a patent of invention related to a new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, the evident purpose of which is to allow to incorporate, into an only conductor body, two conduits one of which is to perform an intake function, and one for expelling outside a steam jet generated by a boiler incorporated inside the machine, so avoiding, in a full and total manner, to use two independent - conduits connected with the machine for alternately or simultaneously performing the two mentioned operations, this new arrangement counting on appropriate hermetic connecting means, this arrangements including also electric connection links on the machine support or base.

## FIELD OF THE INVENTION

This invention applies to the industry devoted to the manufacture of industrial and domestic cleaning machines.

## RELATED ART

At present, the domestic and industrial cleaning machines, used for carrying out, starting from an only body, intake operations, on the one hand, and for emitting water under pressure outside, on the other hand, use two independent conduits or pipes fitted, in turn, with separate connections, and its has been checked that, when in service, losses are sustained in relation with the connections, having a total lack of aesthetics in the shape or configuration thereof.

The applicant, on his side, has no notice about the existence at present of arrangements or systems related to a dual channeling allowing same to be used for steam emission and intake configured in only one element.

An evident solution would be to rely on a new arrangement which could contemplate the above mentioned problems and would provide a solution.

## SUMMARY OF THE INVENTION

The new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines as proposed by the invention, constitutes per se an outstanding novelty in the field to which it is incorporated, since starting from same it is possible to use domestic and industrial cleaning machines which are capable of jointly performing steam emission outside and steam intake through a nozzle, counting on the possibility that both the connection and the chan-

neling used and contemplated in the new arrangement, allows to practically extend in an indefinite way the same, until reaching points or places which are to be cleaned and located in areas away from the site where the machine is placed.

In a more definite way, the new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, which is the subject of the present invention, is constituted starting from the connection to a domestic and industrial cleaning machine of a part acting as a basic nozzle, which is fixed to the support located on the own machine, this nozzle having a fixing stub provided with a releasing push-button, and having, at one of its mouths, appropriate electric connections, the mouth corresponding to the intake side, and a third tight connection with an outlet for the steam generated by a boiler located inside the machine.

At the other end of the terminal nozzle, there is placed a flexible conduit or pipe having an indeterminate length, which is fastened to this nozzle by an appropriate retainer, the flexible conduit having, at its other end, a complementary part where the corresponding acting controls are situated, it is to say, two - push-buttons by means of which the machine is started to carry out intake operations or performing cleaning operations by means of the steam jet generated by a boiler situated in the machine, being also possible to carry out joint operations, for which, there are arranged, in the flexible conduit, cables which are fully hermetized and protected, connected with the electric terminals situated on the head of the basic nozzle.

Internally, the flexible conduit has a central channeling over which an intake action is performed, while also inside the flexible connection, a second channeling is located, having dimensions or thickness which are markedly inferior to that above-mentioned, and, in turn, having inside electric cables for driving the assembly, and other connection, having a minor diameter, through which a steam jet generated by a boiler located in the basic machine is expelled.

Said terminal part fitted with appropriate acting push-buttons can be coupled with a hollow part, made of the same material as the basic part and terminal connected with the flexible conduit or pipe, that is to said, made of a stiff plastic material, and fitted with appropriate fixing means, and being capable of being connected to parts having similar characteristics, having, in its inner portion, a channeling through which a dust intake is performed, and a second channeling connected, like the other, with the terminal part through which the steam jet generated by a boiler in the base machine, passes.

At the end of the part fixed to the part fitted with push-buttons, a part acts as working element,

having a cylindrical mouth with dimensions similar to those of the extensions, having a general deformation adopting a plant triangular shape and presenting two markedly elongated grooves in its main - branch, one of them, specifically that greater, being used to carry out the suction of materials deposited on the surface to clean, while the other groove is for making easy the ejection of vapor through several holes, acting as jet diffusor, this part being complemented by means of a complementary element fixed on rails located on the suction and steam ejecting areas, fitted with a plurality of filiform elements cooperating in the cleaning operations.

Said filiform elements are located on two parallel alignments, counting o a third alignment formed by a rubber part having a plant rectangular shape, these three elements being fastened by means of conventional screws and this part presenting two ample parallel openings directly connected to the steam outlet and to the intake inlet.

All the parts are connected each other, so hermetizing the - channelings they incorporate, for which they rely on appropriate inner configurations the function of which is to make hermetic the unions acting as union nipples.

In synthesis, the invention contemplates a male connector fitted with an electric connection outlet, a suction or intake connection, and a steam connection, relying on the relative unions for suction, steam and cables, having an appropriate outlet fixing to the flexible pipe and being fitted with an anchoring element impeding a non desired separation of this connector from the machine, the union element being capable of moving by means of a push-button releasing it.

At the opposite end to that provided with outlets for electric connection, intake or suction and steam, there is incorporated a flexible conduit or pipe having an intake conduit and a housing for a steam pipe and cables.

At the end of the flexible conduit or pipe, there is a part acting as a handle, which, in addition of having appropriate channels or conduits for jointly performing intake and steam operations, has a conduit for cables, counting on external push-buttons protected with an outer membrane.

At the end of the handle, there are extension tubes adopting a cylindrical shape having a markedly ovoid configuration and counting on a sleeve type connection, of double inlet for the steam and intake operation, with a fixing system by means of an automatic anchoring tongue, inlet and outlet.

Obviously, if each of these conduits relies on the corresponding connections, they have appropriate intake and steam emission conduits with their respective insulation.

Lastly, the invention relies on an accessory part for expelling out the steam and for carrying out the intake, fitted with a coupling conduit up to the intake nozzles and provided with a steam diffusor.

On the external side of said accessory part, there is an element fitted with rubber strips for cleaning and picking up any dirt deposited on a surface, said accessory part incorporating also appropriate brushes.

## BRIEF DESCRIPTION OF THE DRAWINGS

In order to complement this description and to aid to a better understanding of the features of the invention, the accompanying drawings, which are a part of this specification, show in an illustrative but non limitative sense, the following:

Figure 1 shows a general view of the new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, which the subject of this invention, connected to a cleaning machine within which appropriate intake and steam formation means acting as a basic cleaning - machine are incorporated.

Figure 2 shows a side elevational view, duly sectioned, of a part acting as male connector with the existing connection base on the machine, showing an approach but not connected condition.

Figure 3 is a front elevational view from the area corresponding to that fitted with appropriate mouths and connections of the object illustrated in Fig. 2.

Figure 4 is a side elevational view duly sectioned of the object illustrated in Fig. 2, showing the machine and the connector connected.

Figure 5 is a plan view of the object illustrated in Fig. 4.

Figure 6 is a side elevational view duly sectioned showing the nozzle fitted with operating controls.

Figure 7 is a side elevational view duly sectioned corresponding to a detail of the union of the nozzle with an extension tube.

Figure 8 is a side elevational view duly sectioned of an extension tube.

Figure 9 is a view of the object illustrated in Fig. 8, coupled to other similar element.

Figure 10 is a front elevational view duly sectioned of the object illustrated in Figs. 7, 8 and 9.

Figure 11 is a view corresponding to a detail of the fixing link between conduits and complementary parts.

Figure 12 is a plan view of the accessory part acting as end mouth of the new arrangement.

Figure 13 is a plan view of a strip of accessories.

Figure 14 shows, lastly, a sectioned view of the end accessory part connected to an extension tube, fitted with the appropriate auxiliary strips.

#### DETAILED DESCRIPTION OF THE INVENTION

From view 1, it can be seen the manner in which the new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, is constituted starting from a domestic and industrial cleaning machine (1), which acts as a basic machine, which has a connecting base (2), where it is made the adaptation of a part acting as male connector (3), fitted with appropriate fixing links (5), Figure 3, which are inserted into a recess existing at the base or fixing element (2). This fixing element can be moved by means of a push-button (4) in order to release the part (3) from the area where it is fixed, this part (3) being adapted by using a spacer ring (10) to a flexible tube or conduit (13), inside which there are incorporated an intake conduit (12), a steam conduit (11) and the relative electric connection cables, housed in an insulating protector tube (13'), such as it can be seen in Figure 5.

At the end of the flexible conduit (13), there is fixed by - means similar to that described, a tip part or handle (14), Figure 6, fitted with appropriate push-buttons (15) and (16), which are protected by means of a membrane, for starting the machine to perform a suction function or a steam emission, or both at the same time, having at the lower side of the push-buttons protected by membranes (15) and (16), appropriate connections (17) with the conduction or electric installation located inside the flexible conduit (13) and the inner cavity existing in the handle (14), as shown in Figure 3.

The handle (14) can be adapted with extensions (2) provided with appropriate hermetic links and fixing means, and these can be adapted, lastly, with a part acting as an accessory element for diffusing steam and adequate enlargement of the intake mouth (30), to which an accessory strip carrier part (40) can be adapted.

From Figure 2, it can be seen that on the base (2), a male connector (3) can be adapted by fixing the link (5), which is movable by means of the push-button (4) to be released, the part (3) having a central mouth (8) through which the machine will act as suction cleaner, the flow generated by the machine (1) will pass through the whole channeling, and then being transmitted through a channeling existing in the inner portion of the supporting base (2), and which communicates with the mouth (8).

In the central portion or connection side of the part (3), there is a recess (6), illustrated in Figure 3, where it can be seen the existence of electric connectors (7), the mouth (8) and the connection valve (9), through which the steam jet generated by a boiler located in the machine (1) will flow, the three connections resting fully hermetic.

Following Figure 4, it can be noted that thanks to the movable element (5), which acts as a fixing stub, the parts (2) and (3) are perfectly united, allowing the intake flow generated by the machine (1) to pass into the machine, and, at the same time, allowing the steam generated by machine (1) to be ejected out through a nozzle (9') located in the machine (1), connected with the valve (9), arranged at the end of the channeling or conduit (11), as seen in Fig. 5.

A flexible conduit (13) arises from the male connector (3), said flexible conduit having a channeling or conduit (12) through which the suction operation is performed, and an insulating protector pipe (13'), incorporating inside a channeling (11) through which the steam is ejected out, and the corresponding electric connections, until reaching the nozzle or handle (14), illustrated in Figure 6, fitted with push-buttons (15) and (16) which are protected by a plastic membrane, by means of which it is possible to act on the electric connection element (17) and to start the machine (1) for performing the operation as desired, having this handle (14), shown in Figure 3, a deformation at its emerging end for housing in it a complementary part (50) receiving the two conduits from inside the handle, in a hermetic manner, this presenting an intake inlet connection (19), and a steam outlet connection (18), ready to receive other elements of the assembly having similar characteristics.

To the end of the handle (14), as shown in Figure 6 in a marginal detail, and, at the same time, in Figure 7, a part acting as extension tube (20) can be connected under pressure, this parts having appropriated inner conduits (11') and (12') to be adapted to the mouths (18) and (19) located at the connecting sleeve (50), as above mentioned, these mouths remaining undetachably fixed by means of a fixing element (22), fitted with an inner spring allowing the parts (14) and (20) to be pulled apart under pressure, the retaining element (22) being inserted into an opening (21) acting as an undetachable coupling element, unless the appropriate pressing down of a push-button (22) is made, so the retained parts being released.

It is to be pointed out that this fixing mechanism between nozzles and conduits is contemplated in all the parts which are connectable each other, as well as the hermetic areas (18) and (19) located at the connecting sleeve (50) allowing the steam to separately pass on and the suction to act,

respectively.

From Figure 8, it can be seen that the tube (20), acting as extension, connected at one of its ends to the handle (14), can be connected with a tube or similar (20'), being adapted by means of the sleeve (50') carrying the channelings (18') and (19'), and with the assistance of the auxiliary fixing element (22), adapted to the opening (21), carried by the tube (20'), both parts remaining coupled (20) and (20').

Figure 10 shows with detail the inner configuration of a tube (20), inside which it can be seen a central conduit (12') which allows the intake flow generated by the machine (1) to pass on, as well as a channeling (11') which allows the stream or flow of steam originated within a boiler (1) to pass toward the exterior.

In the mentioned Figures, it can be noted the manner in which the tubes (20) and (20'), or the handle (14) and the tube (20) are united each other thanks to the action of retaining elements (22) or (22') which emerge from the inner portions of general bodies (14), (20) or (20'), and adaptable, by coupling, to openings existing in the parts designed for acting as situation link of retainers (22) or (22').

In Figure 12, it is seen that the opposite end of an extension tube (20) or (20') is adapted to an auxiliary part (30) by using its end configuration (31) adopting a form similar to the tubes surface (20) or (20'), and having a channeling (33) connected with an adapting nozzle (32) through which the steam stream passes toward the exterior of a perceptible longitudinal opening through a lower hole (34), the steam jet remaining diffused and being ejected out by a plurality of diffusors, while the suction exerted by the machine is carried out through an ample opening connected to an inner channeling (35).

Figure 13 shows the area where the outlets of the ~~steam diffusors and the suction action emerge~~, an auxiliary element (40) being capable of being coupled, constituted by a strip fitted with accessories among which there are a rubber strip (42) and two brush lines (43), shown in Figure 14, in order to make easy the machine (1) operation, the strip (40) having a retaining lock (41) to lock it on the basic part (30).

Likewise, Figure 14, showing a duly sectioned side elevational view, illustrates the manner in which the part (40) is coupled with its end parts acting in collaboration with the strip carrying same, assisting very much to a domestic cleaning.

It is not considered necessary to extend more this description for an expert in the art to understand the scope of the invention and the advantages derived from it.

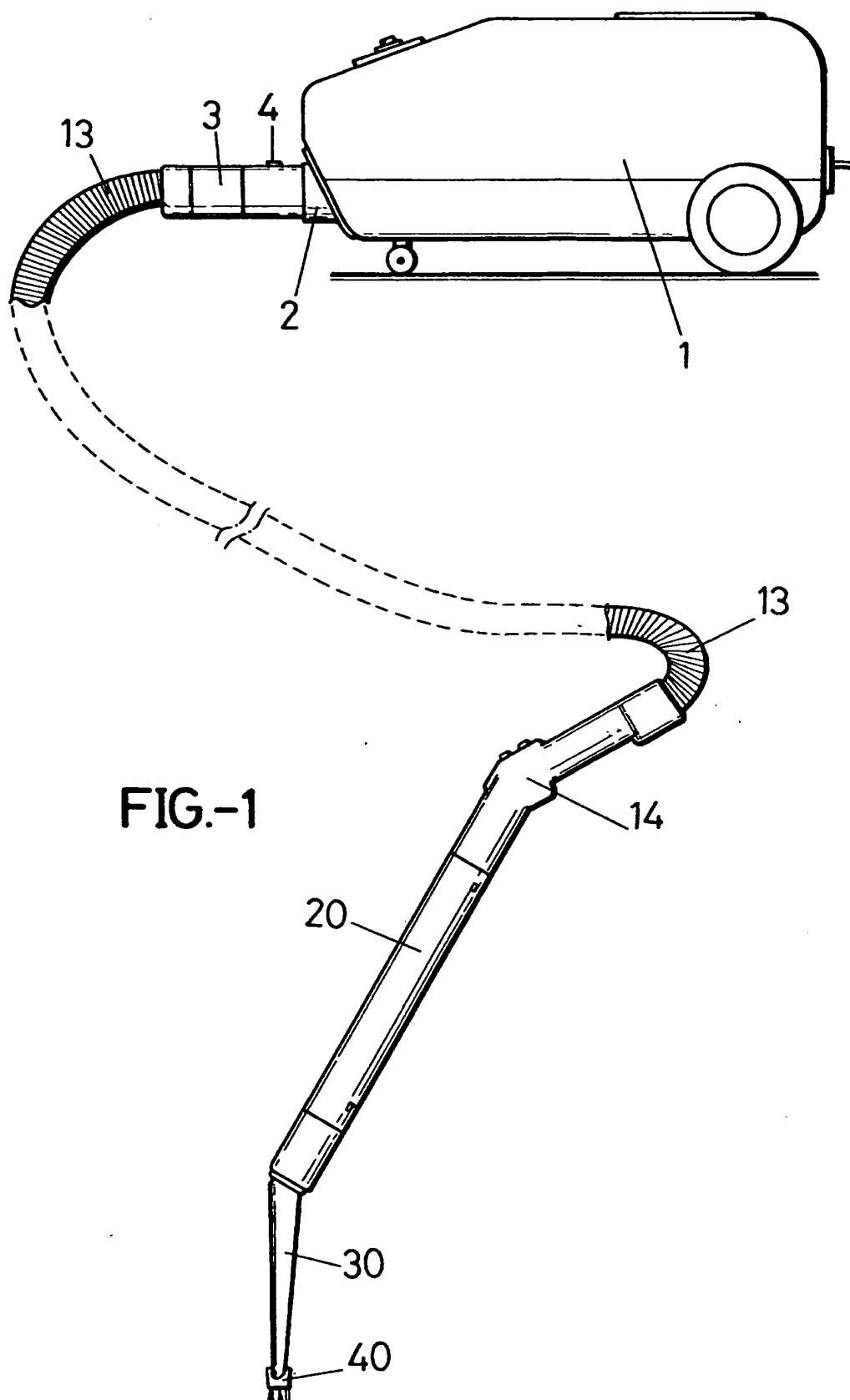
The materials, shape, size and arrangement of the components are open to variation, provided that it does not imply any alteration to the essence of the invention.

The terms under which this specification has been described should be always taken in an ample and non limitative sense.

## Claims

1. A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, of those designed for expelling out a steam stream produced inside a boiler located in a cleaning machine (1), the machine being also designed for generating a suction stream carried out by a device placed within the own machine, characterized in that it is constituted starting from a male connector (3) united to a flexible tube or conduit (13) and this, in turn, to a handle part (14) for starting the machine (1), the handle (14) being - united to one or several extension tubes (20) and (20'), one of them having, at the end, an auxiliary part (30) presenting a connection area adopting a shape similar to the union area of extensors (20) and (20'), from which a plant triangular deformation fitted with two openings in its base branch emerges. To this deformation, an auxiliary element (40) can be fixed, this element having two openings which are coincidental with those existing at the part (30) and counting on, optionally, a rubber strip (42) and several brush lines (43).
2. A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, according to claim 1, characterized in that the male connector (3), made of a stiff plastic material, has a fixing link to the base (2) located on machine (1), constituted as a detachable stub (5) by means of a push-button (4), having inside the male connector (3) a spacer ring (10), to which a flexible conduit (13) is fixed, made of a plastic material, the flexible conduit (13) being fitted, inside, with a channeling (12) for the suction, and a second channeling (13') protecting and insulating a conduit (11) through which the steam is ejected to the exterior, and leaving a hermetic area for passing on electric cables connected to connections (7) located on the front side of the part (3), exactly in a recess, these connections being coincidental (7) with those corresponding located on part (2) from which it receives power, and there being at the middle center por-

- tion of the recess (6) of the part (3), an internally stiffened opening (8) designed for allowing the suction flow to pass on, and a third connection (9) designed for allowing the steam flow from a boiler located inside the machine (1) to pass on, the connection (9) being connected to a steam intake (9') fixed to the fixing base (2).
3. A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, according to claim 1, characterized in that the flexible tube (13), having inside electric conduits connected with terminals (7), has, at one of its ends, an inner conduit (12) through which the suction flow passes on, and an insulating protector tube (13') carrying inside a conduit (11) through which the steam stream is expelled outside, in addition to the control electric cables of the machine, having at the opposite end to that connected with the male connector (3) a handle (14), externally fitted with two push-buttons (15) and (16) protected by a membrane, which are joined to cables (17) communicating with the flexible conduits through which the electric power passes on.
4. A new arrangements of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, according to claim 3, characterized in that the handle (14), made of a stiff plastic material, hollow inside, has at the area next to its handle, not provided or joined to the flexible connection (13), a part (50), inside which there are links or hermetizing areas (18) and (19), which make hermetic the steam flow and the suction, respectively, with parts which are adapted to this end, counting on an emerging push-button (22), insertable into an opening (21) located on the mouth at its external area, to which an opening (21) is adapted, located on the incorporated part, which has internally a conduit or channel (12) for passing on the suction flow, and a channeling (11) for passing the steam stream toward the exterior, and with its corresponding hermetic links (18) and (19) or (18') and (19').
5. A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, according to claim 1, characterized in that to the end of extension tubes (20), made of a stiff plastic material, and having a cylindrical ovoid section, a part (30) is connected, this part having a mouth (31) communicated by means of a channeling (12) with a suction area (35) and, by means of a nozzle (32), with a conduit (33) communicating, through an opening (34) with an area of diffusors situated on the lower branch of a plant triangular configuration emerging from a nozzle (31) or adapting area, having at the lower portion of the base branch, two openings aligned in parallel, one of them being used for expelling outside the atomized steam flow, and the other opening being used for suction, both openings for steam expelling and suction being communicated with the inner channelings of steam expelling (11) and suction (12), respectively, of the extension tubes (20) and (20') or of the handle (14).
6. A new arrangement of joint connection and channeling of two conduits, applicable to domestic and industrial cleaning machines, according to claim 1, characterized in that it has an auxiliary part (40), provided with a rubber strip (42) and two lines of brushes (43), between which there are the suction and steam outlet openings, the part (40) having a safety retaining element (41).





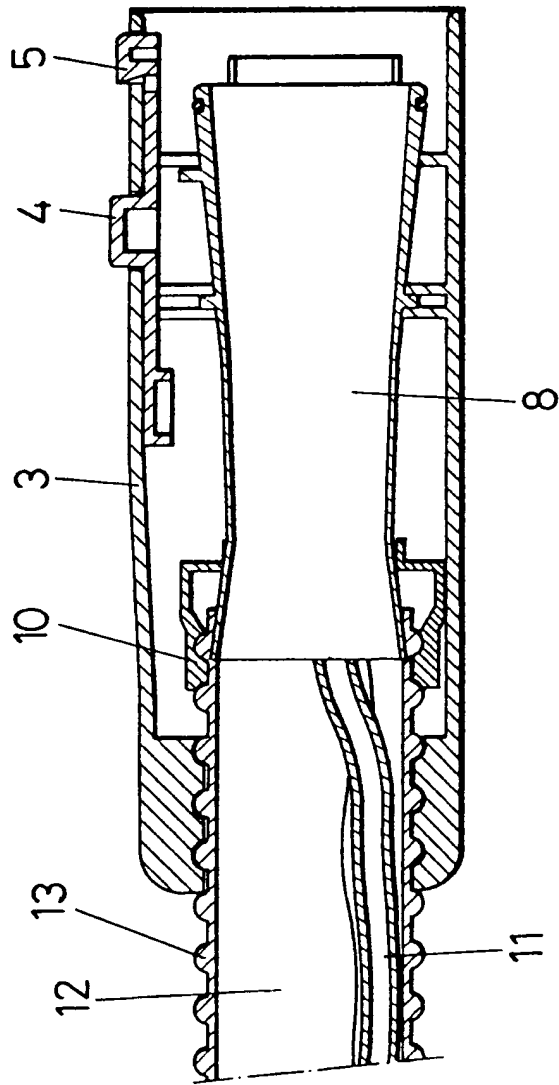
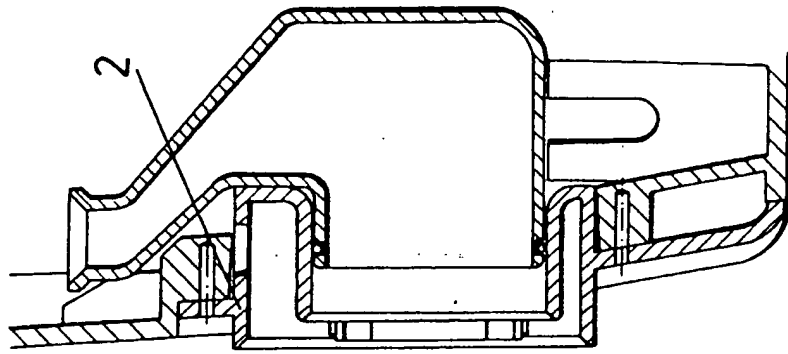
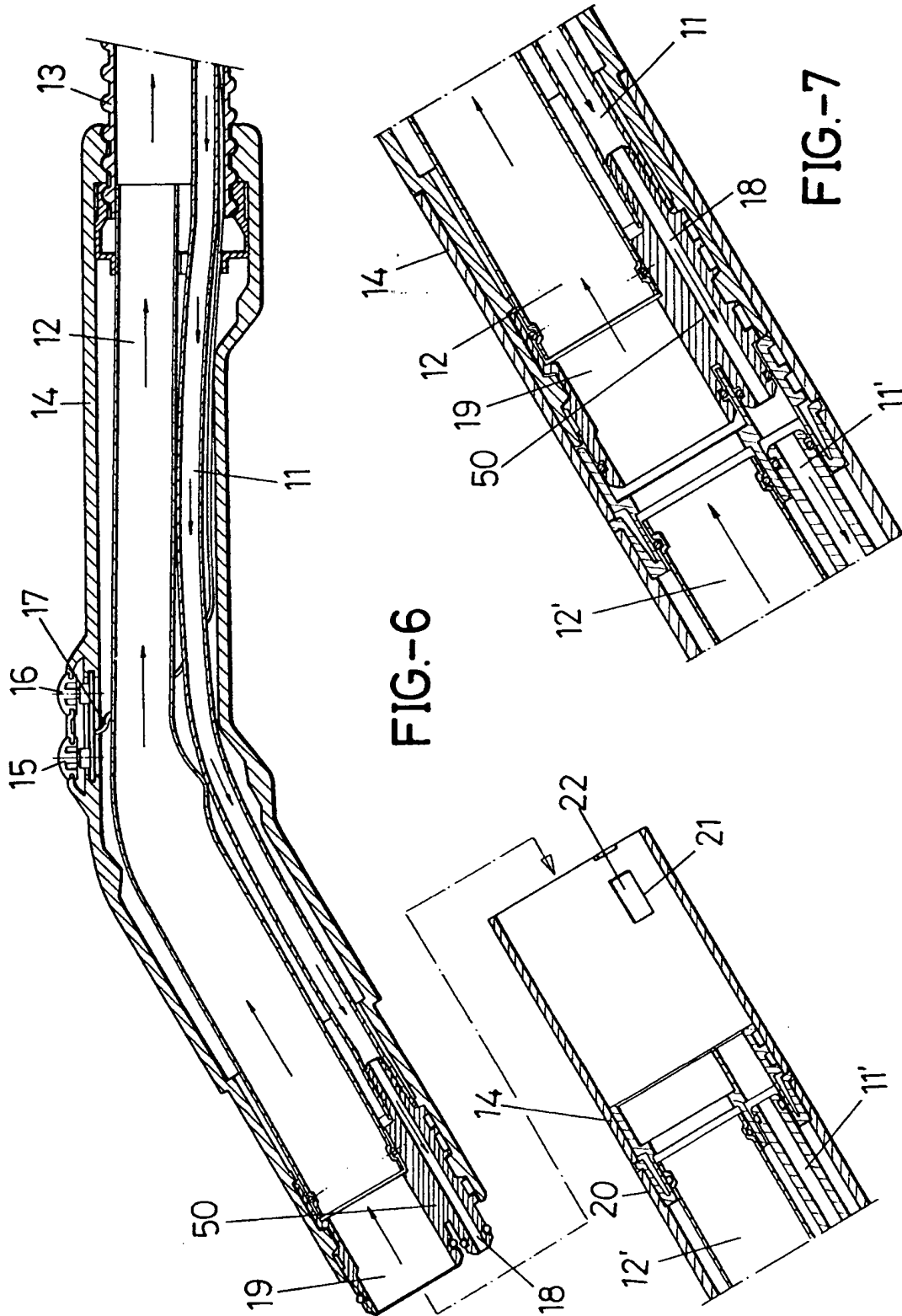
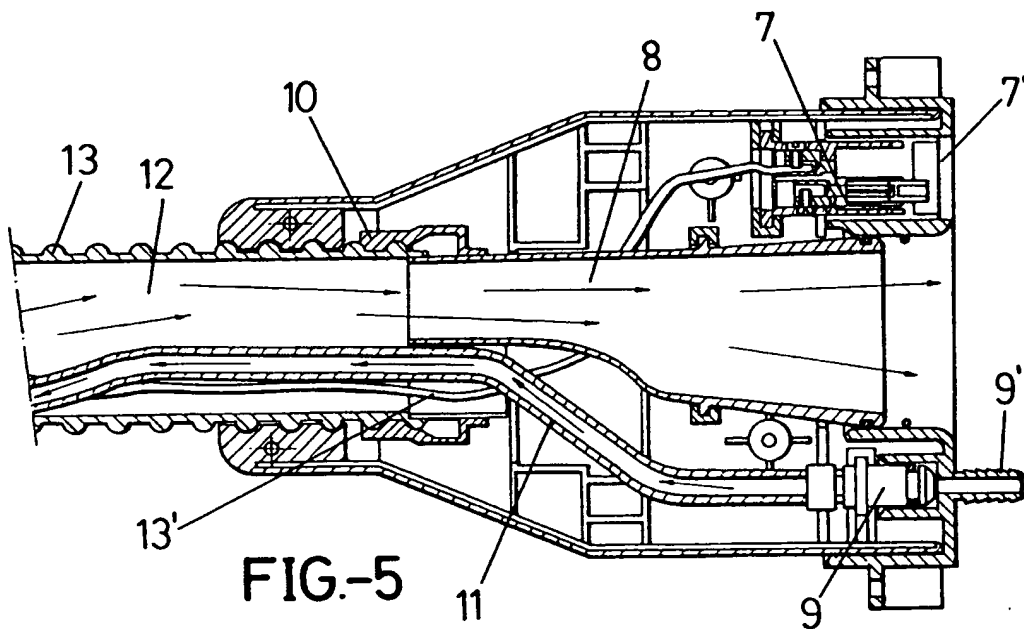
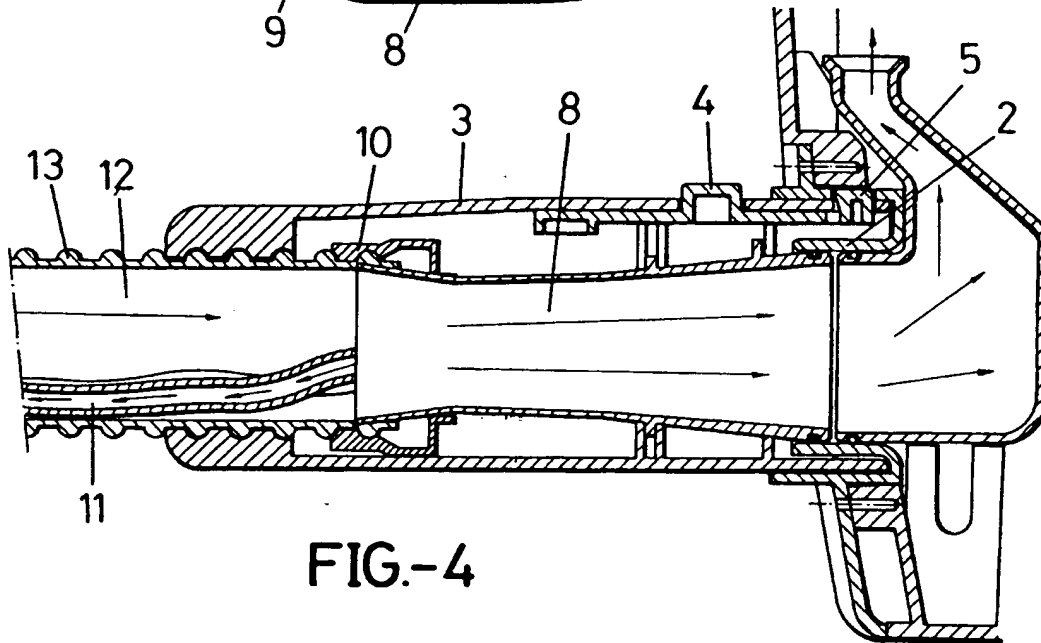
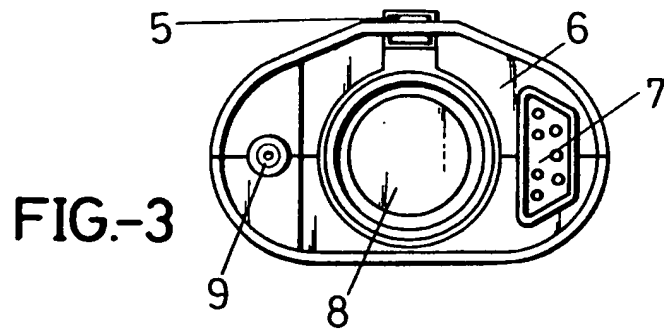
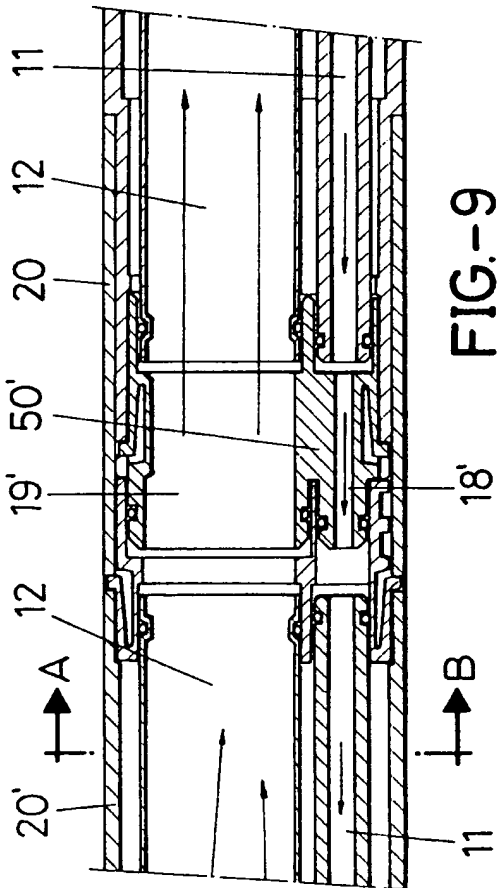
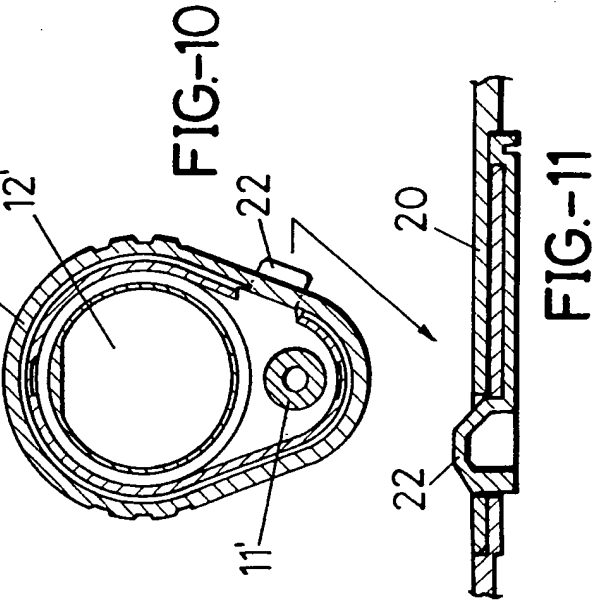
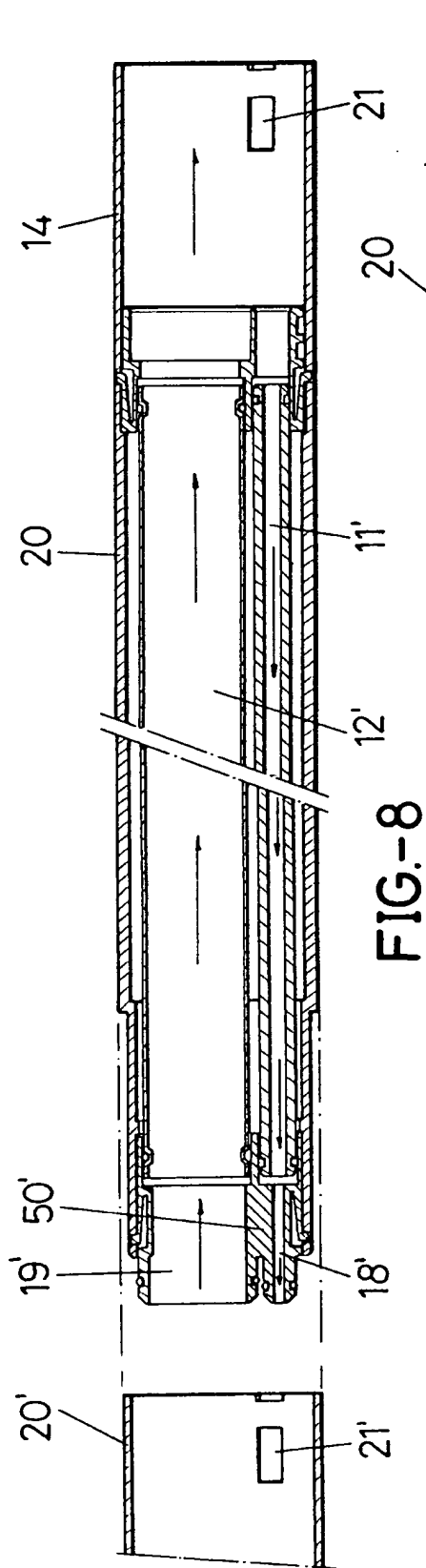


FIG.-2







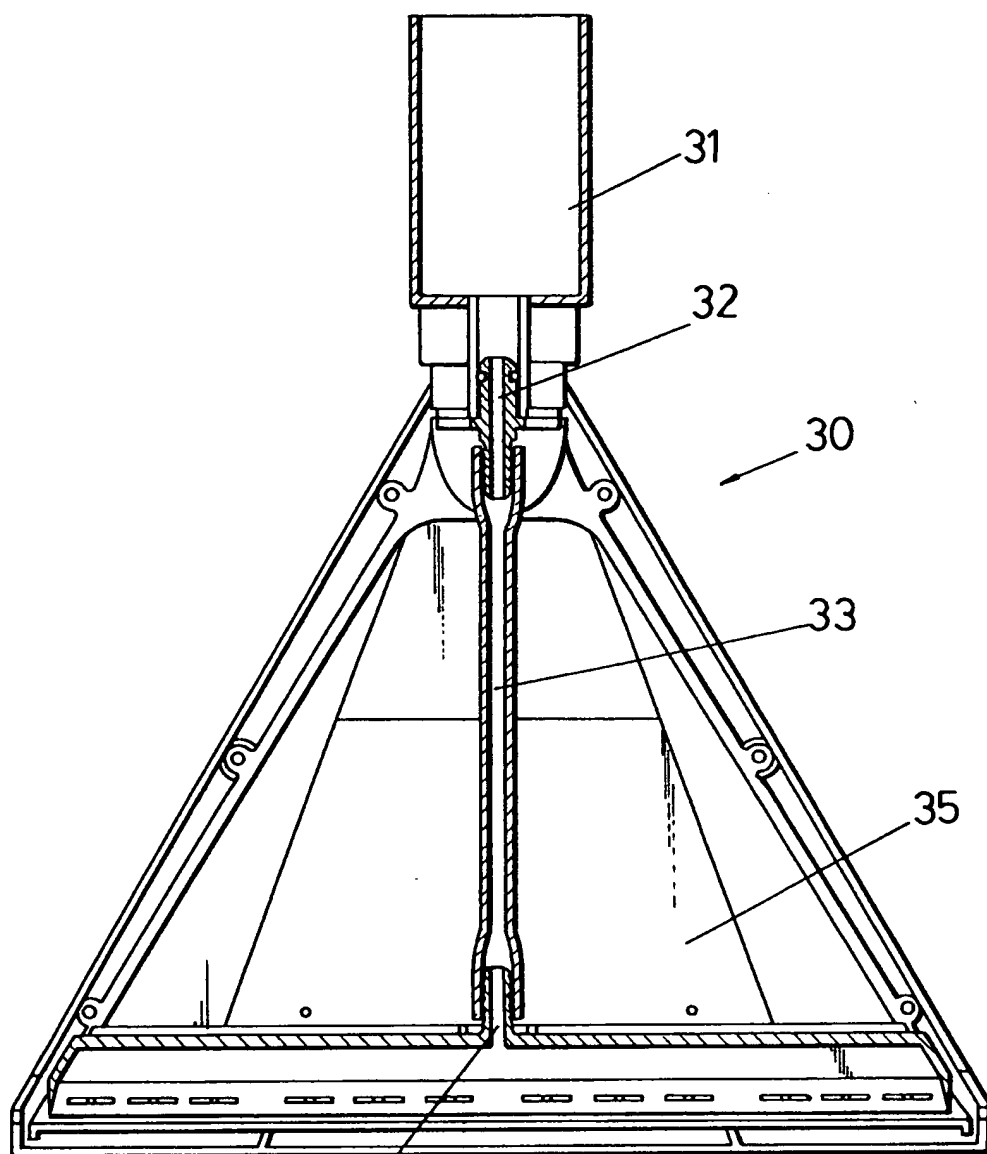


FIG-12

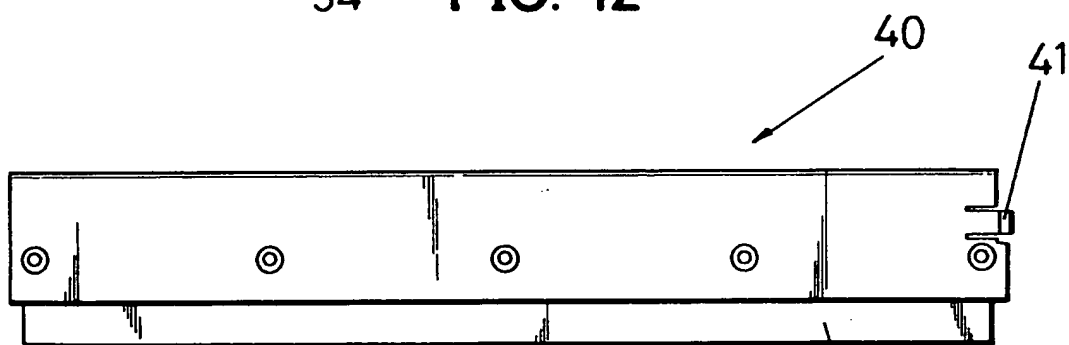
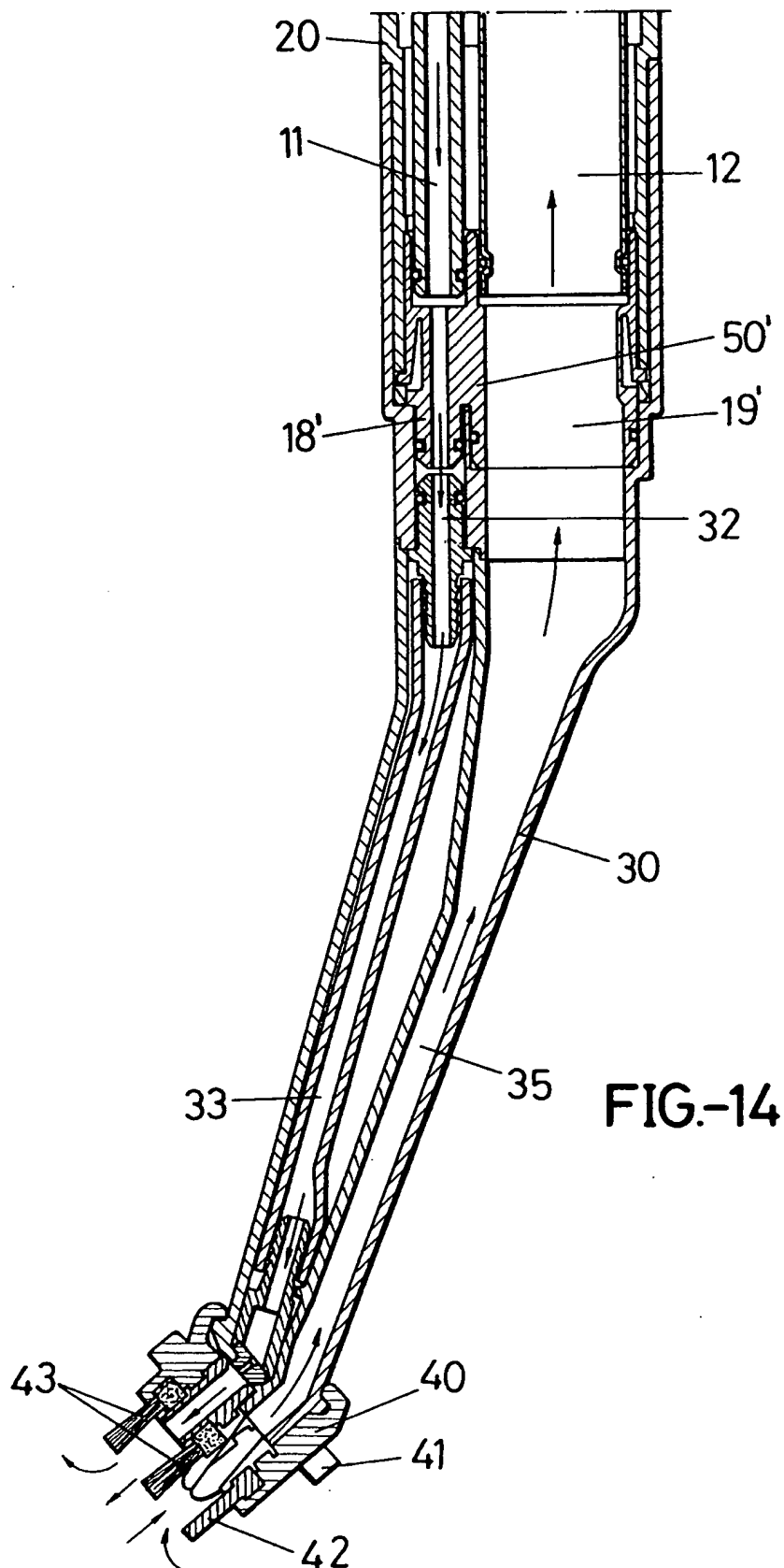


FIG-13





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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 50 0098

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	US-A-4 083 077 (A.M. KNIGHT & AL) * column 3, line 26 - column 5, line 12; figures *	1,5,6	A47L11/34 A47L11/40
Y	EP-A-0 176 696 (ALFRED KAERCHER GMBH & CO) * page 5, paragraph 2 - page 10; figures *	1,5,6	
A	DE-A-25 27 207 (BOSCH-SIEMENS HAUSGERAETE GMBH) * page 1 - page 3; figures *	1	
A	US-A-4 159 554 (A.M. KNIGHT & AL) * column 2, line 43 - column 4, line 36; figures *	1	
A	EP-A-0 375 490 (SHOP-VAC CO) * column 6, line 25 - column 14, line 53; figures *	5,6	
A	EP-A-0 485 827 (RADWULF SA) * the whole document *	4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 June 1995	Examiner Vanmol, M
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